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A Revision of the *Liasis childreni* species-group (Serpentes: Boidae)

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Abstract

The five taxa comprising the *Liasis childreni* species-group, viz. *Liasis childreni* Gray, *L. perthensis* Stull, *L. maculosus* Peters, *L. stimsoni stimsoni* sp. nov. and *L. stimsoni orientalis* subsp. nov., are described and their distributions mapped. A lectotype is designated for *L. maculosus.*

Introduction

In an earlier paper (Smith 1981b) I informally divided Australian mainland *Liasis* into two species-groups: the *Liasis olivaceus* group comprising *L. olivaceus, L. olivaceus barroni* and *L. mackloti,* which are large pythons up to 550 cm in total length, lack dorsal pattern and have one (occasionally two) loreals; and the *Liasis childreni* species-group which comprises small pythons up to about 100 cm in total length, have 3-23 loreals and usually some indication of dorsal colour pattern.

This paper is a result of an examination of all *Liasis 'childreni'* in Australian museums and relevant type specimens. The number of specimens examined were: *L. childreni* (252), *L. perthensis* (58), *L. maculosus* (79), *L. stimsoni stimsoni* (106) and *L. stimsoni orientalis* (117).

Registered numbers of Western Australian Museum specimens are cited without a prefix. Specimens from the Australian Museum are prefixed AM, Museum of Victoria (MV), Donald F. Thompson collection housed in the Museum of Victoria (DT), South Australian Museum (SAM), Queensland Museum (QM), Northern Territory Museum (NTM), Central Australian Wildlife Collection of the Conservation Commission of the Northern Territory housed in Alice Springs (CAWC), Australian National Wildlife Collection housed in Canberra (ANWC), British Museum of Natural History (BMNH), Museum of Comparative Zoology Harvard (MCZ) and Zoologisches Museum Berlin (ZMB).

The *Liasis childreni* species-group can be divided into two sub-groups: those species with a persistent colour pattern *(L. stimsoni* and *L. maculosus)* and those in which the dorsal pattern tends to disappear *(L. childreni* and *L. perthensis).* Individuals in the latter sub-group are often unicoloured but usually retain some dorsal pattern. There are varying degrees of pattern loss (see Figures 1 and 2) which cannot be ascribed to sexual dimorphism or geographic variation; for males

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of *L. perthensis* or *L. childreni* from the same area can be unicoloured or patterned. It is possible that this variation is ontogenetic. The pattern of large specimens is usually much reduced or absent and most very small specimens are well patterned. Nevertheless a series of *L. perthensis* or *L. childreni* shows no concordant change in pattern when individuals are arranged according to their size. McDowell (1975: 48) observed a similar condition in *Liasis boa*.

Methods of counting scales are as in Smith (1981a). The small scale between the preocular and the labials is counted as a loreal (rather than a very small preocular). Percentages for meristics are given to the nearest whole number.

Systematics

Liasis childreni Gray, 1842
Figures 1, 2

Liasis childreni Gray, 1842; Zool. Misc.: 44.

Diagnosis

Usually distinguishable from *L. stimsoni* and *L. maculosus* by its unpatterned purplish-brown back. Colour pattern, if present, consisting of small, irregular, smooth-edged, purplish-brown blotches moderately or barely contrasting with the ground colour. (The pattern of *L. maculosus* comprises ragged-edged chocolate-brown blotches which tend to coalesce anteriorly and posteriorly; the pattern of *L. stimsoni stimsoni* large, bold reddish-brown, smooth-edged round or elongate blotches; and the pattern of *L. stimsoni orientalis* bold, reddish-brown, smooth-edged transverse bars.)

Distinguishable from *L. perthensis* by having more midbody scale rows (36-46 v. 31-35).

Description

Largest and smallest specimens 1024 and 235 mm in total length. Tail 9.7-13.9% of SVL (N 74, mean 11.9%). Head 1.2-2.2 times as long as wide (N 221, mean 1.7).

Rostral without sensory pits. Usually 2, rarely 3 pairs of prefrontals; anterior pair always in contact, posterior pair or pairs usually separated by 1-3 small scales. Cleft from nostril back to loreals. Loreals 4-16 (N 429, mean 7.9). One preocular. Postoculars 2 (3% of specimens), 3 (32%), 4 (61%), 5 (4%) or 6 (0%) (N 429, mean 3.6). Anterior temporals 2 (1% of specimens), 3 (31%), 4 (50%), 5 (16%) or 6 (2%) (N 431, mean 3.9). Upper labials 10 (2% of specimens), 11 (38%), 12 (46%), 13 (12%), 14 (2%) or 15 (0%) (N 473, mean 11.8), usually first, rarely second with a sensory crease, fifth and sixth entering orbit in 81% of specimens. Lower labials 12 (3% of specimens), 13 (12%), 14 (53%), 15 (28%) or 16 (4%) (N 452, mean 14.1) with 3-7 pits (N 456, mean 4.5) usually commencing on labials 7 or 8.

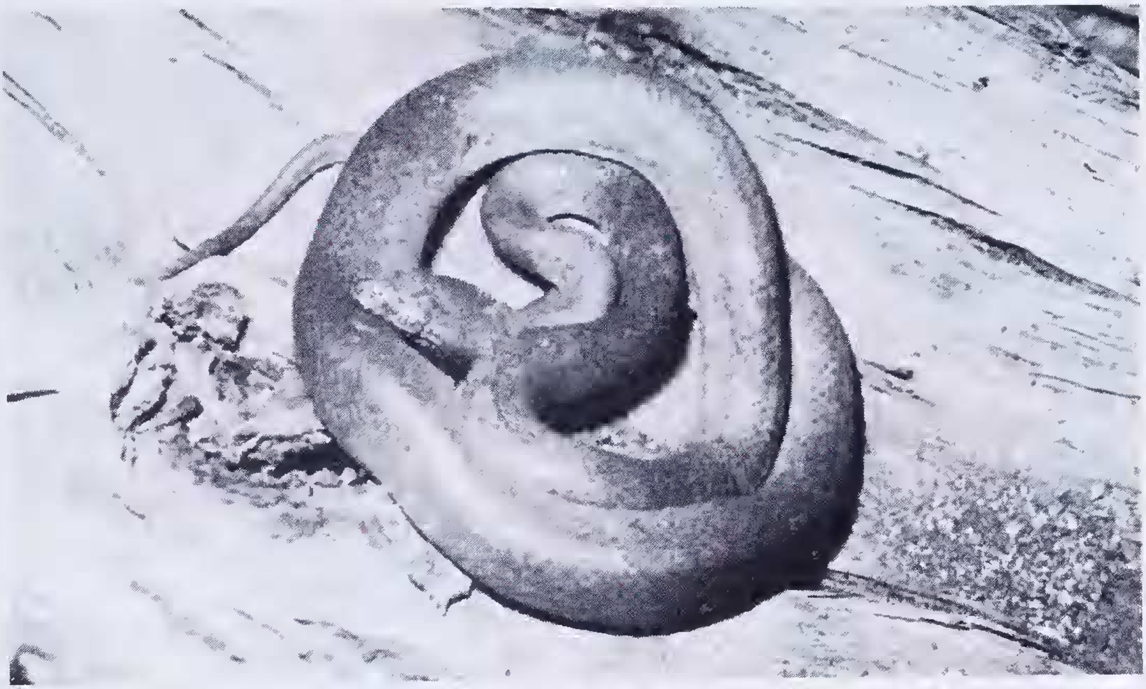

Figure 1 A *Liasis childreni* from Mitchell Plateau, Western Australia (60694) without dorsal pattern. Photograph R.E. Johnstone.

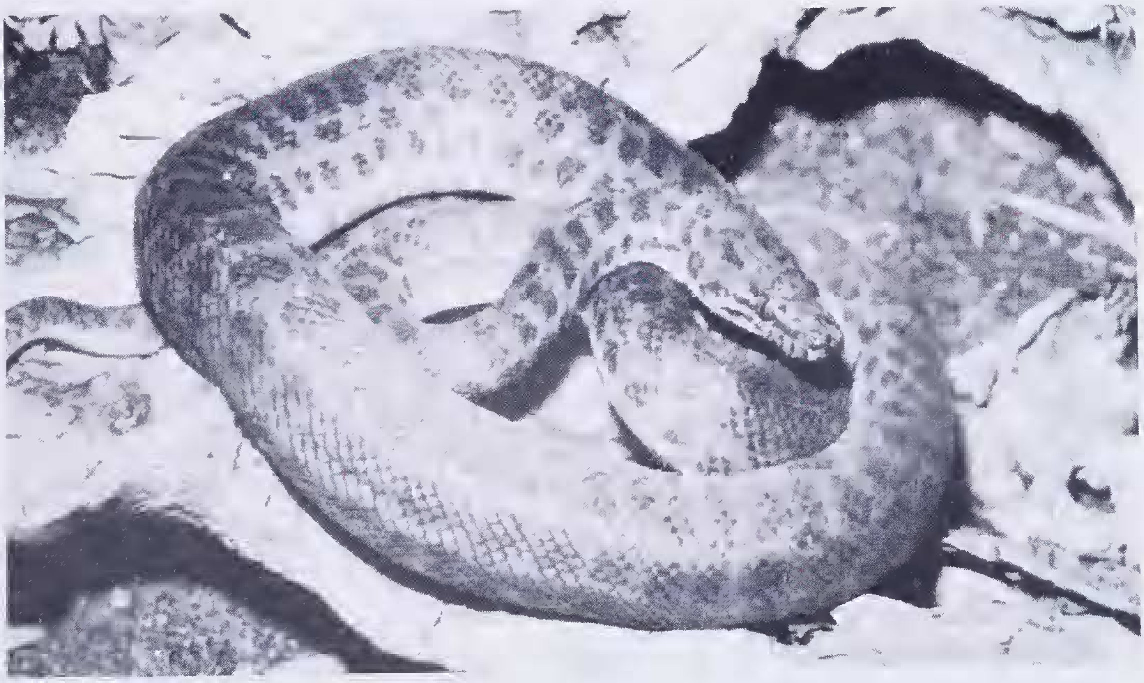

Figure 2 A *Liasis childreni* from Mitchell Plateau, Western Australia with prominent dorsal pattern. Photograph R.E. Johnstone.

Ventrals 251-300 (N 221, mean 272.8). Anal entire. Subcaudals 38-57 (N 233, mean 47.3), mostly divided. Ventrals plus subcaudals 293-352 (N 200, mean 321.6). Scale rows at midbody 36-46 (N 221, mean 41.3); at neck 24-39 (N 58, mean 33.3, decreasing by 1-16); before vent 19-29 (N 67, mean 24.1, decreasing by 11-21).

Head purplish-brown with or without small darker purplish blotches on crown and usually a similar-coloured dark streak through lore, under orbit onto lower temple. Labials, particularly upper labials, often with dark markings on their anterior margins. Chin shields and throat immaculate.

Dorsally purplish-brown with or without small, slightly darker, circular, smooth-edged blotches and (rarely) elongate transverse blotches (never bars) (Figures 1 and 2). White anterior ventrolateral stripe absent or poorly defined. Belly whitish, slightly opalescent.

Distribution

Far northern Western Australia south to Kuri Bay, Mt Bell and Halls Creek; Northern Territory south to Tanami Desert, Three Ways and Barkly Tableland; and north-west Queensland east to Normanton and south to Mt Isa. Also numerous islands off Australia's northern coast.

Remarks

Examination of the holotypes of *Liasis childreni* (BMNH 1946.1.16.78) and *Nardoa gilbertii* (BMNH 1946.1.16.69), has shown that both names apply to the species described above.

Material

Western Australia (Kimberley Division)

Troughton I. (28326-27); Baudin I. (57102); Kalumburu (22322, 34080); lower Drysdale River in 14°13'S, 126°35'E (52627); Drysdale River National Park in 14°40'S, 127°00'E (50804); Crystal Creek in 14°29'S, 125°51'E (43047, 43109); Mitchell Plateau (60677, 60694); Augustus I. (41317); Heywood I. (41509); Kuri Bay (22926); presumably Kimberley Research Station (22358-59); north of Kununurra (SAM 15913); Kununurra (ANWC 0495, ANWC 2805); 24 km SE of Kununurra (57237); Forrest River Mission (AM 9995, AM 14052, AM 14933); Parry Creek (28049); 20 km SE of Wyndham (70098); '32 km from Wyndham' (26791); 22 km SE of Wyndham (23094-95); Beverley Springs (55997, 41273); Koolan I. (29142, 41506); Lake Argyle (40780, 42824-25, 42845, 52668, 57215-31); 11 km W of Lissadell (70485-86); 12 km NNW of Lissadell (70687); Mt Bell (32267); Halls Creek (55905).

Northern Territory

Cape Wessel (NTM 7743); Bathurst I. (NTM 7943, NTM 8015-18, NTM 2454); Port Essington (BMNH 1946.1.16.69) [holotype of *Nardoa gilbertii*]. Milingimbi (DT 1057-58, 1055); Cape Stewart (DT 1056); Yirrkala (SAM 3514, SAM 5918); Darwin and suburbs (21978-79, 40298, NTM 0302, NTM 0841-42, NTM 2116, NTM 2846, NTM 3117, NTM 3425, NTM 4703, NTM 4770, NTM 6912, MV 4523, MV 8358, MV 8416, MV 8487-88, SAM 2178, SAM 6712, SAM 17031, ANWC 0791); Howard Springs (NTM 0244, NTM 8122, NTM 8394); Humpty Doo (NTM 2224, NTM 3462, ANWC 2996); 5 km E of Humpty Doo (NTM 4654); 5 km NW of Humpty Doo (NTM 4769); vicinity of Humpty Doo (AM 31707); Beatrice Hill (AM 60301,

CAWC 1393, CAWC 1646, CAWC 1696-721); 18 km E of Mt Bundy (NTM 3632); 26 km SE of Noonamah (NTM 2878, NTM 2938); 11 km N of Adelaide River (24005); 15 km SW of Howley (AM 89130); Kapalga (ANWC 1285); 31 km S of Darwin (NTM 2080); 40 km S of Darwin (NTM 0028); Berry Springs (NTM 0146); Jabiru East (NTM 5243); just W of Nourlangie (ANWC 2679); Ban Ban Spring (NTM 3168); El Sharana (74067-68); Arnhem Land (MV 1059, DT 1060); Northeast Isles (NTM 7827); Groote Eylandt (AM 11028-29, AM 10226-27); Rose River Mission (MV 10985, MV 10987, MV 13864-65); 13 km N of Claravale (NTM 0027); 15 km NW of Katherine (NTM 2278); Katherine Gorge (ANWC 0496); Katherine (13968, 26691, 26835-36, NTM 2291, NTM 2295, NTM 2307, NTM 3808, SAM 7847, SAM 5919, MV 51863, AM 20652); 3,7,11,11,13,15,16,16,20,20,35,35, and 37 km SW of Katherine (NTM numbers 2277, 2171, 2294, 2302, 2279, 2290, 2280-81, 4476, 2219, 0097-98 and 6606 respectively); 3,14, and 26 km SE of Katherine (NTM 2273, ANWC 0087 and NTM 0279 respectively); Moroak (CAWC 1655, CAWC 1657); Stuart Highway between Mataranka and Katherine (NTM 5241-43); 40 km E of Mataranka (AM 80335); Roper River (AM 9927); Roper River Mission (MV 10969); Roper (ANWC 0291); Gorrie (AM 12840); 50 km S of Bullo River HS (NTM 6883); Bullo River Stn (AM 76510); 30 km ENE of Newry (60187); 10 km S of Coolibah (60339); 10 km WSW of Fitzroy (NTM 2120, NTM 7081); 5 km S of Fitzroy (NTM 2162); 40, 35 and 15 km SW of Willeroo HS (NTM 2163, NTM 2164, NTM 7080 respectively); 17 km NW of Willeroo (NTM 2165); 32 km WSW of Auvergne (NTM 6884); Jasper Gorge (AM 72495); Victoria River Downs HS (NTM 2140, NTM 2338); 3 km WNW of Victoria River Downs (NTM 2124); Humbert River Stn (31182); Humbert River (ANWC 0173); Kildurk (40991, 40995-96); 19 and 20 km S of Dunmarra (AM 69302, and NTM 5305 respectively), 15 km SSE of O.T. Downs (NTM 3335); 20 km NE of Balbirini (NTM 6422); Cananbirini Waterhole (AM 48648, AM 52364, AM 55321); Bauhinia Gorge (AM 55309); 12 and 32 km NE of McArthur River HS (NTM 6421 and ANWC 0958 respectively); McArthur River (AM 55498, QM 26984); Glyde River (AM 54675); Borroloola (AM 69086); Borroloola road (AM 53517); Gulf of Carpentaria (SAM 6710*a-e*); 25 km NNE of Newcastle Waters (32018); 56 km N of Renner Springs (AM 69303); Eva Downs (CAWC 1915); 12 km NE of Brunette Downs (NTM 5217); Rockhampton Downs (NTM 8440); 8 km S of Alexandria (CAWC 581); Three Ways, Stuart Highway (NTM 5176).

Queensland

Mornington I. (SAM 4959); Doomadgee Mission (QM 10324, SAM 6093); Burketown (QM 391); Normanton (AM 63481, QM 4752); 3 km S of Normanton (AM 63424); Gregory Downs (QM 682); Planet Downs (SAM 4722); Mt Isa (AM 28430, AM 28456, AM 25984); 15 km E of Mt Isa (AM 60300); Mica, S of Mt Isa (ANWC 3111).

BMNH 1946.1.16.78 (holotype of *Liasis childreni*) [locality unknown].

Liasis perthensis Stull, 1932

Figure 3

Liasis childreni perthensis Stull, 1932. *Occ. Pap. Boston Soc. Nat. Hist.* 8: 26.

Diagnosis

Distinguishable from *Liasis stimsoni stimsoni, L. stimsoni orientalis* and *L. maculosus* by its lack of bold, persistent dorsal pattern and from *L. childreni* by its lesser size and fewer midbody and ventral scales (31-35 and 212-250 v. 36-46 and 251-300 respectively).

Description

Largest and smallest specimens 608 and 322 mm in total length. Tail 10.3-12.4% of SVL (N 20, mean 11.4). Head 1.5-2.1 times as long as wide (N 32, mean 1.7).

Rostral without sensory pits. Usually two, rarely three pairs of prefrontals; anterior pair always in contact, posterior pair or pairs usually separated by one or two small scales. Cleft from nostril back to loreals. Loreals 5-11 (N 76, mean 7.3). One preocular. Postoculars 2 (3% of specimens), 3 (50%) or 4 (47%) (N 78, mean 3.4). Anterior temporals 3 (18% of specimens), 4 (49%) or 5 (33%) (N 76, mean 4.1). Upper labials 9 (3% of specimens) 10 (18%), 11 (53%), 12 (18%), 13 (3%) or 14 (5%) (N 76, mean 11.2), without sensory creases, the fifth and sixth entering orbit (92% of specimens). Lower labials 11 (3% of specimens), 12 (39%), 13 (26%), 14 (27%) or 15 (5%) (N 62, mean 12.8) with 2-4 pits (N 60, mean 3.1) usually commencing on labials 8 or 9.

Ventrals 212-250 (N 42, mean 232.0). Anal entire. Subcaudals 34-45 (N 45, mean 38.7), mostly divided. Ventrals plus subcaudals 248-292 (N 39, mean 271.6). Scale rows at midbody 31-35 (N 48, mean 32.7); at neck 25-32 (N 21, mean 29.0, decreasing by 1-8); before vent 20-24 (N 28, mean 21.8, decreasing by 8-14).

Head reddish-brown with or without small darker brownish flecks and blotches on crown and sometimes a similar-coloured dark streak just above labials from nostril, through lore, under orbit onto lower temple. Labials, particularly upper labials, with dark markings on anterior edges. Chin shields and throat immaculate.

Dorsally plain reddish-brown. Pattern, if present, consisting of small diffuse blotches and flecks (Figure 3). White ventrolateral stripe absent. Belly whitish, slightly opalescent.

Distribution

Mainly the Pilbara region of Western Australia but also adjacent areas with rocky terrain.

From Goldsworthy and Callawa in the north, west to North West Cape, east to Well 24, Canning Stock Route and Wiluna and south to Mullewa. Also Rosemary, Malus and Depuch Islands in the Dampier Archipelago.

Remarks

Examination of the holotype of *Liasis childreni perthensis* leaves no doubt that the dwarf python from the Pilbara is the species Stull (1932) described.

Loveridge (1934: 268) listed six specimens from the Western Australian Museum. Number 192 (now MV 831) is an *L. perthensis* from Marble Bar. Numbers 1417, 1837 and 2651 are *L. stimsoni stimsoni* and 345 and 4062 are *L. stimsoni orientalis* (data for 345 cannot be traced; see under Material for localities of remainder).

Mitchell (1965) correctly applied the name *perthensis* to the Pilbara taxon despite its inappropriate name.

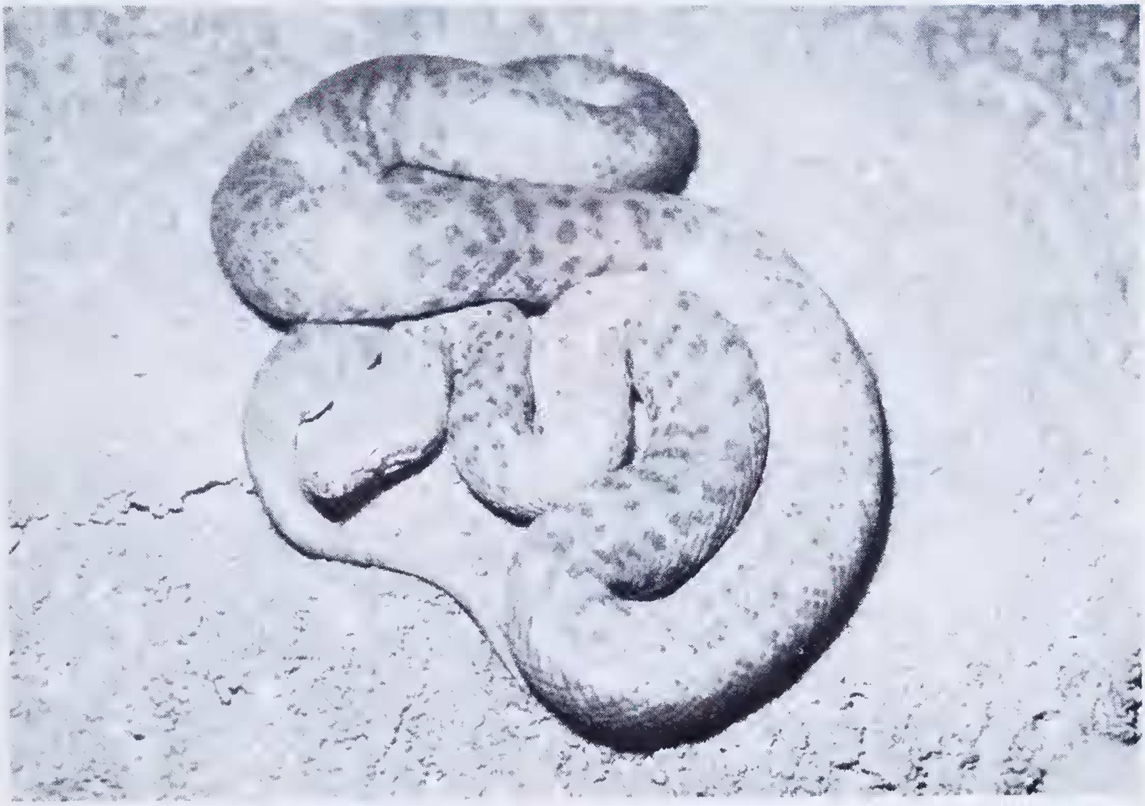

Figure 3 A *Liasis perthensis* (63165) from near Callawa. Photograph R.E. Johnstone.

Material

Western Australia (North-West Division)

Mt Goldsworthy (36674-75); Strelley (25375); Rosemary I. (37718, 40831-32, AM 75101); Malus I. (14532); West Lewis I. (37704); Depuch I. (14565); Roebourne (15111); Mt Edgar Stn (15108-09); Marble Bar (MV 831); Chichester Range (31144); Tambrey (20256-62, SAM 4094-99). Vlaming Head (19677, 22508); Neds Well, North West Cape (28234); Wittenoom (18494-95, 11447); Marandoo (58922); Mt Stuart Stn (45087); presumably Mt Stuart Stn (53465), Tom Price (31018, 41919); Paraburdoo (58934, 64733-34); Newman (29820, 23991); Mangaroon (23920, 26659); 29 km NW of Mt Vernon HS (25229); Middalya (MV 4568); Mt Augustus (52872); Tangadee (22738); Yinnetharra (41061); Kalli (73727).

Eastern Division

Well 24, Canning Stock Route (63900); 29 km NE of Callawa (63165-66); Wiluna 6322, 6341, 6354).

South-West Division

13 km N of Mullewa (52152).

Holotype of *Liasis childreni perthensis* (MCZ 24462) [locality unknown].

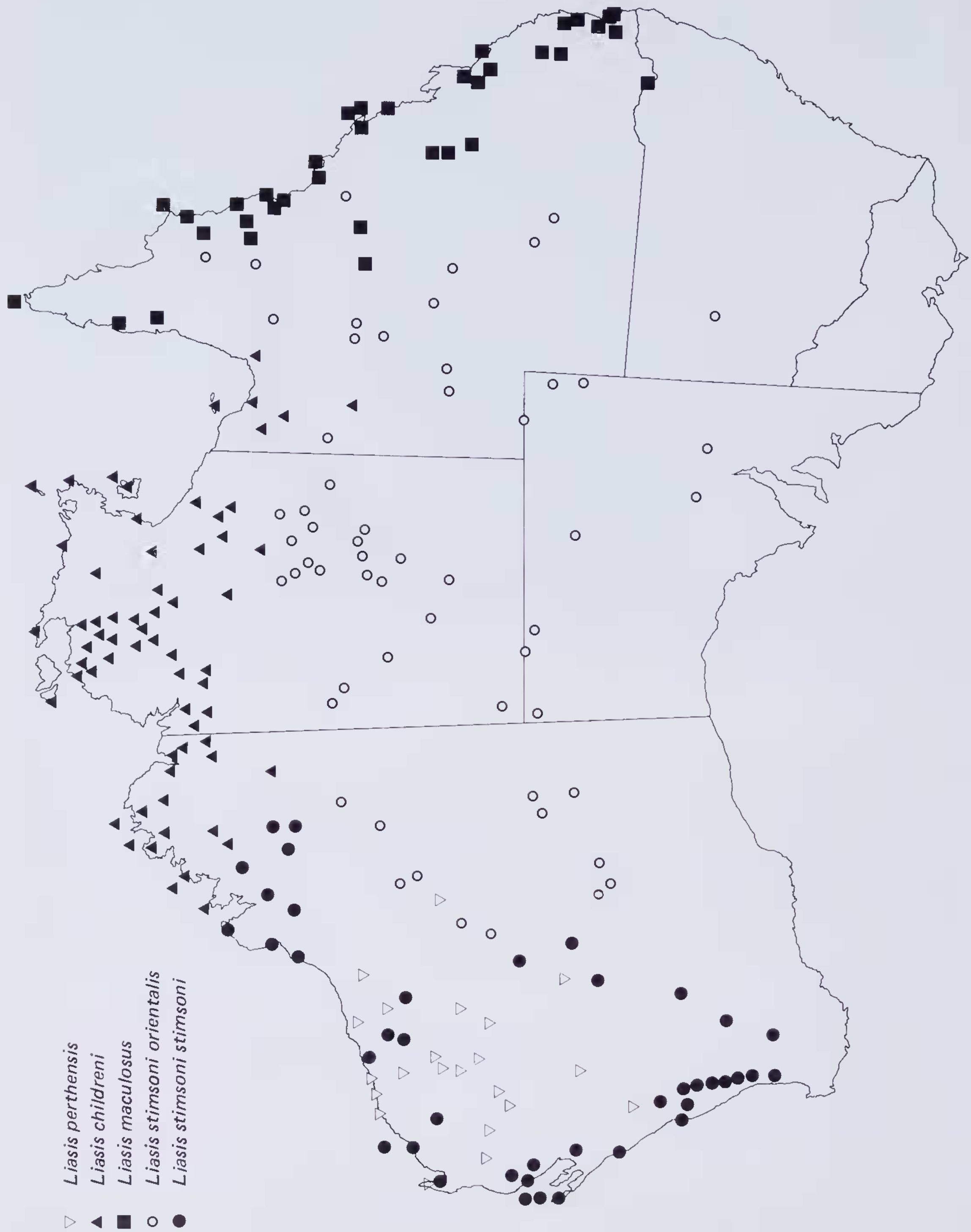

Figure 4 Map showing locations of specimens of *Liasis childreni*, *L. perthensis*, *L. maculosus*, *L. stimsoni stimsoni* and *L. stimsoni orientalis.*

Liasis maculosus Peters, 1873
Figure 5

Liasis maculosus Peters, 1873. *M. Ber. K. preuss. Akad. Wiss.* Berlin 1873: 608.

Lectotype
ZMB 5948, Port Mackay [= Mackay, Queensland, in 21°09'S, 149°11'E].

Paralectotypes
ZMB 5860 (Rockhampton, Qld); ZMB 7513 (Port Bowen) [= Port Clinton, Qld in 22° 29'S, 150°45'E].

Diagnosis
Distinguishable from other taxa in species-group by persistent dorsal pattern of chocolate-brown, ragged-edged blotches which tend to coalesce anteriorly and posteriorly. Dorsal pattern of other members of species-group, if present, is reddish-brown, the blotches or bars having smoother edges and with no tendency for anterior and posterior blotches or bars to coalesce.

Description
Largest and smallest specimen 1050 and 312 mm in total length. Tail 8.5-12.2% of SVL (N 16, mean 10.0). Head 1.5-2.1 times as long as wide (N 68, mean 1.7).

Rostral without sensory pits. Two pairs of prefrontals rarely separated by small azygous scales. Cleft from nostril back to loreals. Loreals 3-10 (N 157, mean 4.7). Preocular 1. Postoculars 2 (3% of specimens), 3 (66%), 4 (28%) or 5 (3%) (N 148, mean 3.1). Anterior temporals 3 (53% of specimens), 4 (43%), or 5 (4%) (N 149, mean 3.3). Upper labials 10 (46% of specimens), 11 (46%) or 12 (8%) (N 143, mean 10.6), sometimes first with a sensory crease, fifth and sixth entering orbit (95% of specimens). Lower labials 12 (16% of specimens), 13 (51%) or 14 (33%) (N 131, mean 13.1) with 3-5 pits (N 137, mean 4.0), usually commencing on labial 7.

Ventrals 246-287 (N 72, mean 263.5). Anal entire. Subcaudals 37-48, mostly divided (N 70, mean 42.1). Ventrals plus subcaudals 288-332 (N 67, mean 306.3). Scale rows at midbody 35-44 (N 73, mean 38.3); at neck 28-35 (N 20, mean 31.3, decreasing by 4-10); before vent 22-28 (N 27 mean 24.3, decreasing by 9-19).

Head brownish with small darker chocolate-brown blotches on crown and a similar-coloured streak just above labials, through lore (usually), under orbit and onto lower temple (always). Labials, particularly upper labials, with dark markings on anterior edge. Chin shields and throat immaculate.

Ground colour of back fawn or off-white with ragged-edged blotches (dark pigment confined to whole scales). Anterior and posterior mid-dorsal blotches tending to coalesce forming a wavy stripe (Figure 5). Ventrolateral stripe poorly defined or absent. Belly whitish.

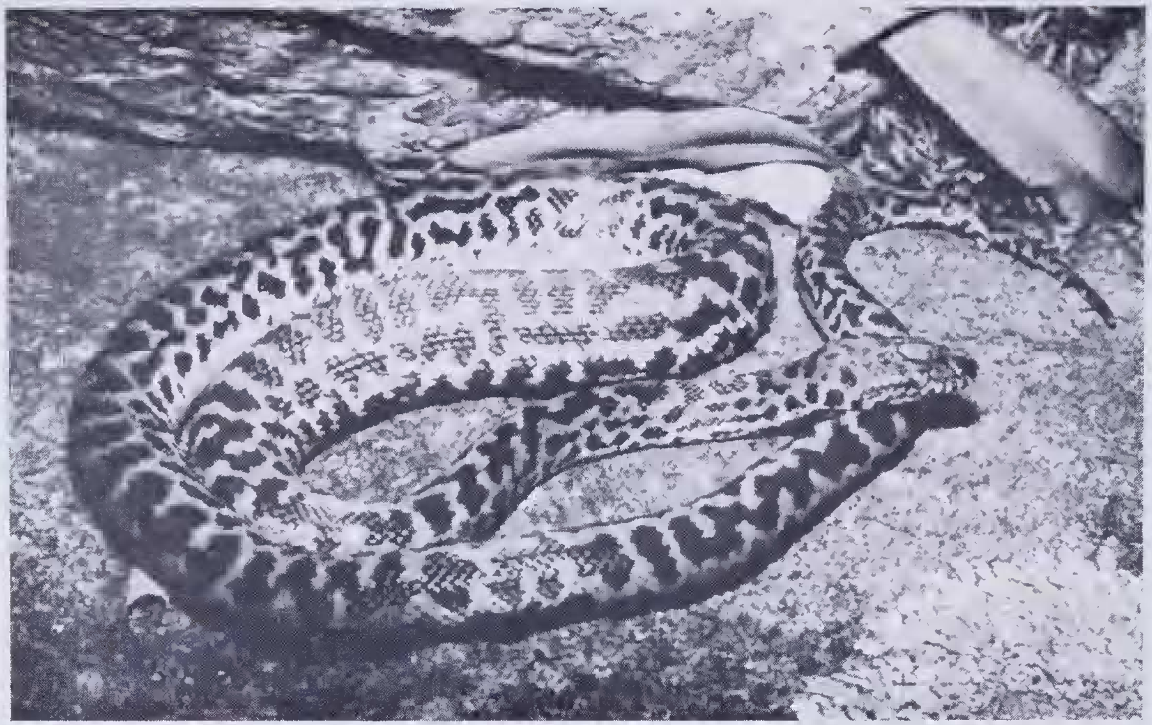

Figure 5 A *Liasis maculosus* from near Calliope, Queensland. Photograph S.K. Wilson.

Variation

The posterior loreal occasionally fuses to the adjacent labial, a condition not observed in other taxa in the species-group.

The sum of ventrals plus subcaudals averages higher in the north than south, as can be seen when data are arranged in three classes of latitude:

	10°-16°S	17°-22°S	23°-28°S
N	15	21	23
range	300-332	288-324	291-311
mean	317.5	303.6	301.3

Distribution

Eastern Queensland from Torres Strait south nearly to the New South Wales border. Also numerous islands off the east Queensland coast.

Remarks

The best preserved of the three syntypes of *Liasis maculosus* (ZMB 5948) is hereby nominated lectotype for the species described above.

Material

Queensland

Hammond I. (AM 74895); lower Archer River (DT 1049, DT 1054); Cape York (AM 6474); 16 km E of Coen (AM 16772); Edward River (NTM 5089); Lizard I. (AM 64072); Cooktown (SAM 12797, AM 10419, AM 10424); Cooktown area (MV 51861); Byerstown Range (AM 17108); Barron Falls (ANWC 2573); Yorkeys Knob (MV 8335); Cairns (SAM 4906, AM 16796, QM 3117, QM 7063); Stannary Hills (QM 324); Almaden (AM 9617); Mission Beach (ANWC 0120); Tully district (AM 69084); Cardwell (AM 75174); Marble I. (QM 5706); Townsville (QM 4646, QM 32218, QM 5377, NTM 0978); 27 km E of Torrens Creek (QM 38906); Holbourne I. (AM 49831); Hayman I. (AM 11731, AM 36650, AM 11520); Prosperine (AM 38308-09, AM 38306); Airlie Beach (AM 92698-99); Lindeman I. (AM 11159, AM 9755, QM 5633, QM 5869); Mackay (ZMB 5948); Retro (QM 6114-15); Capella (MV 8663, AM 58481); Talafa road in 23°26′S, 148°12′E (QM 37053-54); 13 km N of Emerald (QM 24320); 32 km SE of Emerald (QM 24321); Mt Etna (QM 26067); 8 km W of Mt Morgan (AM 54657); Curtis I. (QM 37205, QM 6164-65); Rockhampton (MV 8661-62); 20 km W of Rockhampton (QM 19705-06); Gayndah (AM 6473); Forrest Hill (QM 8486); Hivesville (QM 14488); Gympie (QM 14231); Eumundi (QM 8836); Dayborough (QM 10301); Esk (QM 6771); Closeburn (QM 8252); 64 km W of Brisbane (QM 7450); Pullenvale (QM 7516), Helidon (QM 8421); Rosewood (QM 4277); Texas Caves (QM 26335); locality unknown (AM 5795, 6152, 6753, 6756, MV 12717, 8365).

Liasis stimsoni stimsoni sp. and subsp. nov.

Figure 6

Holotype

R63108 in Western Australian Museum, a male collected 15 km SE of Nullagine, Western Australia, in 21°58′S, 120°12′E by L.A. Smith and R.E. Johnstone on 6 April 1979. SVL 790 mm, tail 82 mm. Wt 214 g. Buccal cavity pink, iris mustard-yellow.

Paratypes

See Material.

Diagnosis

Distinguishable from *L. maculosus* (always) and *L. childreni* (usually) by bold dorsal pattern of irregular brown or reddish-brown circular or transversely elongate smooth-edged blotches in sharp contrast with pale ground colour. (The persistent dorsal pattern of *L. maculosus* comprises ragged-edged, chocolate-brown blotches which tend to coalesce anteriorly and posteriorly; the dorsal pattern of *L. childreni* is often absent, if present it comprises small irregular purplish-brown blotches, moderately or barely contrasting with the ground colour.)

Distinguishable from *L. stimsoni orientalis* by having more ventrals 260-302 v. 243-284), usually the sixth and seventh (rather than the fifth and sixth) upper labials entering orbit, and bold dorsal pattern comprising smooth-edged transverse bars (rather than smooth-edged round or elongate blotches); and from *L. perthensis* by having more ventrals and midbody scale rows (260-302 and 39-47 v. 212-250 and 31-35 respectively).

Description

Largest and smallest specimens 872 and 309 mm in total length. Tail 9.6-13.2% of SVL (N 15, mean 11.1%). Head 1.4-2.2 times as long as wide (N 88, mean 1.7).

Rostral without sensory pits usually two, rarely three, pairs of prefrontals; anterior pair always in contact, posterior pair or pairs usually separated by 1-4 small scales. Cleft from nostril back to loreals. Loreals 7-20 (N 150, mean 12.2). Preoculars 1. Postoculars 3 (5% of specimens), 4 (71%), 5 (22%) or 6 (2%) (N 174, mean 4.2). Anterior temporals 4 (27% of specimens), 5 (44%), 6 (27% of specimens) or 7 (2%) (N 167, mean 5.3). Upper labials 11 (7% of specimens), 12 (39%), 13 (44%), 14 (9%) or 15 (2%) (N 164, mean 13.0), usually first, sometimes second with a sensory crease, sixth and seventh entering orbit (77% of specimens). Lower labials 12 (1% of specimens), 13 (2%), 14 (29%), 15 (57%) or 16 (11%) (N 165, mean 14.5) with 3-8 pits (N 123, mean 5.6) usually commencing on labials 7 or 8.

Ventrals 260-302 (N 96, mean 279.5). Anal entire. Subcaudals 40-53 (N 97, mean 46.2), mostly divided. Ventral plus subcaudals 305-351 (N 86, mean 323.1). Scale rows at midbody 40-47 (once 39) (N 97, mean 43.4); at neck 31-42 (N 64, mean 35.9, decreasing by 2-15); before vent 24-28 (N 75, mean 26.0 decreasing by 10-23).

Head off-white, fawn or pale brown with small brown, dark-brown or reddish-brown blotches on crown and usually a similar-coloured dark streak just above

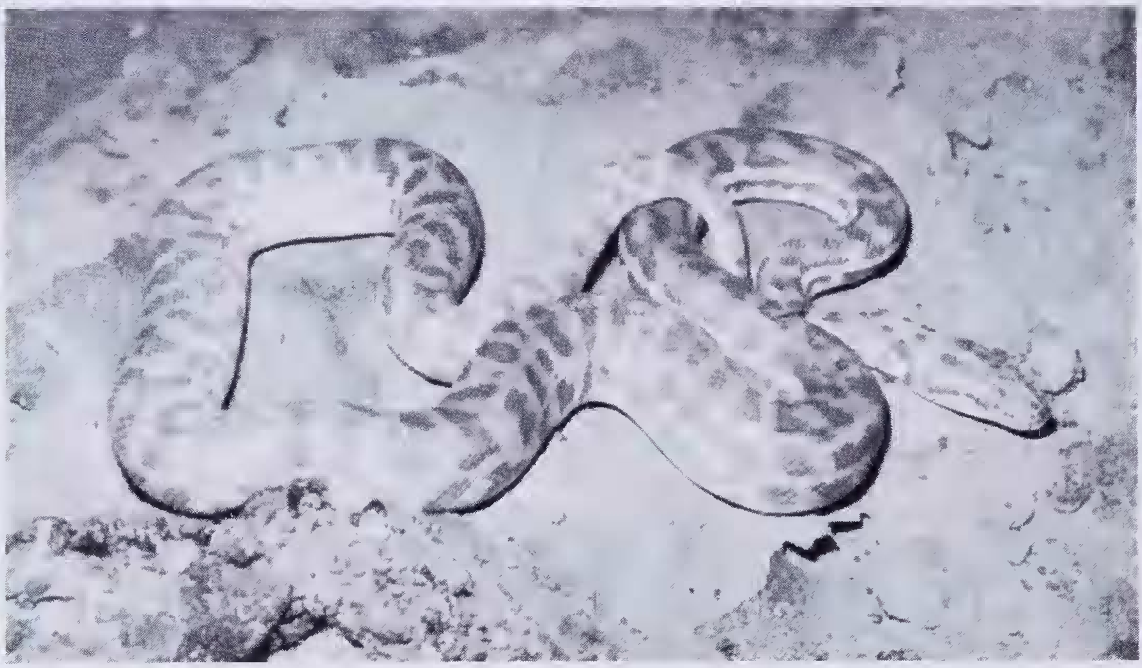

Figure 6 A *Liasis stimsoni stimsoni* from Edgar Ranges (53995). Photograph R.E. Johnstone.

Figure 7 Holotype of *Liasis stimsoni orientalis* from Winduldarra Rockhole, Western Australia (48646). Photograph R.E. Johnstone.

labials from nostril, through lore onto lower temple. Labials, particularly upper labials, often with dark markings on their anterior edges. Chin shields and throat immaculate.

Back off-white, fawn or pale brown with irregular bold round or elongate blotches (Figure 6). Dark scalloping sometimes present on scales of pale interspaces between dark areas of dorsal pattern. White ventrolateral stripe prominent. Belly whitish, slightly opalescent.

Geographic Variation

Individuals from western parts of the range of *L. stimsoni stimsoni* tend to have irregular patterns dominated by round blotches (Figure 7). Further east, their patterns tend to approach that of *L. stimsoni orientalis* in that some blotches are transversely elongate. In some individuals a few of these transverse blotches are joined to form bars but they are never as regular or numerous as in *L. stimsoni orientalis.*

Distribution

Western Australia from Dampier Land, Napier Downs and Christmas Creek in the north, east to Nullagine, Jiggalong, Wonganoo and Laverton and south to Mt Jackson, Merredin, Coolup and Perth. Also on Rosemary, Hermite, Barrow, Bernier, Dorre and Dirk Hartog Islands.

Remarks

This species is named after Mr Andrew F. Stimson of the Zoology Department, British Museum (Natural History), in appreciation of his assistance to the Department of Ornithology and Herpetology, Western Australian Museum (particularly his readiness to lend type specimens).

Paratypes

Western Australia (Kimberley Division)

10 km S of Lombadina (58817); Bugle Gap (26810); Napier Downs (57135); presumably West Kimberley (26712); Mt Anderson (31666-67); Kalyeeda (24805); St George Range (51289-90, 51290*a*); Christmas Creek (26033); Broome (53886); La Grange (28040); Edgar Ranges (53995, 54051-52).

Eastern Division

Wonganoo (37035); Booylgoo (1417); Mt Jackson (60709).

North-West Division

Rosemary I. (13958); Hermite I. (28694); Mundabullangana (14937); Barrow I. (28041-42, 28050, 28461, 28692-93, 45730, 45774, 48966, 48902, 48907, 48960-63, 48965,48967, 51630-32, 56715-17, 58867, 60710-11); Woodstock (13057, 28050); Onslow (58864); Nullagine district (12306); 109 km N of Wittenoom (36681); Learmonth district (11490); presumably Mt Stuart Stn (43463-64); 80 km N of Carnarvon (8110, 21895, 29405); Bernier I. (13484, 20530-33, 30499, 59637-42); Dorre I. (57491, 60441); Callagiddy (40183); Dirk Hartog I. (59440); Overlander Roadhouse (58865).

South-West Division

Kalbarri (32367); 10 km SSW of Kalbarri (33896); 24 km E of Mingenew (29313); 5 km E of Coolimba (72984); Coorow (7385); Green Head (47808); 8 km NW of Mt Peron (49043-44); Watheroo (21573); Coomberdale (21572); Moora (1837); Nungarin (7574); Merredin (21896); Doodlakine (5786); Lower Chittering (24741); Herne Hill (7555); Caversham (5886); West Midland (2651); Maida Vale (28897); North Perth (4833); Darlington (13387); Gooseberry Hill (22330); Kalamunda (52653, 59949-50); Mundaring Weir (47697); Roleystone (30046); Wickepin (22306); Coolup (MV 4603-04).

Liasis stimsoni orientalis subsp. nov.

Figure 7

Holotype

R46846 in Western Australian Museum, a female collected at Winduldarra Rockhole, Western Australia, in 26°31′S, 126°01′E by A.A. Burbidge on 20 March 1975. SVL 795, tail 95 mm.

Paratypes

See Material.

Diagnosis

Distinguishable from *L. stimsoni stimsoni* by having fewer ventrals (243-284 v. 260-302), usually fifth and sixth upper labials (rather than sixth and seventh) entering orbit and bold dorsal pattern usually comprising smooth-edged transverse bars (rather than smooth-edged round or elongate blotches).

Description

Largest and smallest specimens 890 and 264 mm in total length. Tail 10.7-12.3% of SVL (N 15, mean 11.6%). Head 1.3-2.3 times as long as wide (N 85, mean 1.6).

Rostral without sensory pits. Usually two, rarely three, pairs of prefrontals; anterior pair always in contact, posterior pair or pairs usually separated by 1-4 small scales. Cleft from nostril back to loreal. Loreals 5-12 (19 and 23 in one specimen) (N 144, mean 7.9). Preoculars 1. Postoculars 2 (3% of specimens) 3 (26%), 4 (66%), or 5 (5%) (N 145, mean 3.8). Anterior temporals 2 (0% of specimens), 3 (14%), 4 (53%), 5 (32%) or 6 (1%) (N 145, mean 4.2). Upper labials 10 (3% of specimens), 11 (41%), 12 (45%), 13 (10%) or 14 (1%) (N 136, mean 11.7), usually first, rarely second with a sensory crease, fifth and sixth entering orbit in 67% of specimens. Lower labials 11 (2% of specimens), 12 (1%), 13 (11%), 14 (49%), 15 (28%) or 16 (9%) (N 143, mean 13.9), with 3-6 pits (N 124, mean 4.8) usually commencing on labials 7 or 8.

Ventrals 243-284 (N 69, mean 263.8). Anal entire. Subcaudals 38-53 (N 77, mean 42.8), mostly divided. Ventrals plus subcaudals 290-332 (N 66, mean 304.1). Scale rows at midbody 36-45 (once 47) (N 72, mean 40.3); at neck 28-39 (N 25, mean 34.2; decreasing by 3-12); at vent 22-28 (N 34, mean 24.1, decreasing by 12-22).

Head off-white, fawn or pale brown with small brown, dark brown, or reddish-brown blotches on crown and usually a similar-coloured dark streak just above labials from nostril through lore, under orbit onto lower temple. Labials, particularly upper labials, often with dark markings on their anterior edges. Chin shields and throat immaculate. Back off-white, fawn, pale brown or brown with fairly regular to regular bold, smooth-edged brown or reddish-brown elongate blotches or bars; latter interdigitating with those of other side or joining with opposite number to form a bar which can be oblique or transverse (Figure 7). Dark scalloping sometimes present on scales of pale interspaces between dark areas of dorsal pattern. White ventrolateral stripe prominent. Belly whitish, slightly opalescent.

Geographic Variation

The ground colour of specimens from eastern parts of the range of *L. stimsoni orientalis* tend to be darker (brown) and the transverse bars more regular than specimens from the western parts of its range.

Remarks

Geographically and meristically *L. stimsoni orientalis* is intermediate between nominate *L. stimsoni* and *L. maculosus* (see Table 1). However, *L. maculosus* is largely separated from *L. stimsoni orientalis* by the Great Dividing Range and shows north-south clinal variation in at least one meristic character, contrary to the east-west trends in subspecies of *L. stimsoni.*

Of the 223 specimens of *L. stimsoni* (both subspecies) and *L. childreni* examined there were only a few that were difficult to assign to a species or subspecies. They were mostly from the southern Kimberley of Western Australia and the Tanami Desert and Barkly Tableland of the Northern Territory (generally along the interface between the two species) so a narrow hybrid zone between them, at least in some areas, cannot be discounted.

Distribution

Central and eastern Australia. In Western Australia east from the Southesk Tablelands, Canning Stock Route and Cosmo Newbery. In the Northern Territory north to the Tanami Desert, Tennant Creek and Barkly Tableland. In South Australia south to the Tomkinson Range, Woomera, Arakoola and Innamincka. In Queensland north to Camooweal, Julia Creek and Palmerville and east to Bolwarra, Charters Towers and Longreach. In New South Wales only in the north-west.

Paratypes

Western Australia (Eastern Division)

Canning Stock Route (4062); Breadens Pool (64139); Well 43, Canning Stock Route (8718); near Lake Auld in 22°07'S, 123°52'E (63573); 12 km NNE of Well 29, Canning Stock Route (63963); Durba Hills (40365-66, 40562); Well 11, Canning Stock Route (SAM 1762); Windich Spring (40218); Warburton Range (22182, 22300, 31354-56); 129 km S of Warburton Range (48989); Cosmo Newbery (13852); Point Sunday in 28°08'S, 124°05'E (53560); Minnie Creek (14938).

Northern Territory

Anthonys Lagoon (NTM 3669, NTM 0844, NTM 5844-45, NTM 3637); Brunette Downs (NTM 3660, NTM 5219, NTM 3643, NTM 5234, NTM 3649); Muckaty (CAWC 145); Rockhampton Downs (NTM 8438-39); Alroy Downs (8553); Attack Creek (CAWC 3215); 35 km E of Three Ways (NTM 5361); Barkly Highway, E of Frewena (NTM 3683); Tennant Creek (SAM 6716); vicinity of Tennant Creek (AM 84735); Hatches Creek (SAM 3630*a-b*); 61 km NNE of Barrow Creek (AM 60304); 50 km NNE of Barrow Creek (NTM 5233); Barrow Creek (MV 1952); Tanami Desert (AM 69085); 10 km E of the Granites (NTM 0434); Smoke Hills (AM 73910); 3 km W and 13 km E of Barry Caves (AM 92327 and AM 72981 respectively); Murray Downs (MV 8962-63); Elkedra (CAWC 5349); Mt Doreen (AM 73939, AM 90879); Utopia (AM 65229); between Alice Springs and Devils Marbles (AM 79124, AM 84226); 14 km N of Alice Springs (NTM 0712, NTM 0756); 12 km N of Alice Springs (NTM 0713, 0711); Narwietooma (SAM 13149); Alice Springs (SAM 7840, NTM 0543, NTM 2455, NTM 3807, CAWC 2336-37, CAWC 1392, CAWC 4032); Todd River (CAWC 1647, CAWC 1395); Simpson Gap (CAWC 1437, CAWC 1391); Petermann Ranges (CAWC 3270); central Australia (MV 3601); Stuart Highway (CAWC 3216, CAWC 3214); Northern Territory (SAM 6711*a-b*, QM 10257-58).

South Australia
Mt Davies, Tomkinson Range (SAM 5286); Musgrave Park (SAM 7593); Ernabella Mission (SAM 3121, SAM 10990); Cordillo Downs (SAM 15197); Oodnadatta (MV 1956); Innamincka (SAM 4049); Arakoola (SAM 10945); Woomera (SAM 15089).

Queensland
Palmer River [Palmerville] (MV 4826); Bolwarra (ANWC 1636); Croydon (AM 39063-64, QM 32284); 23 km E of Camooweal (QM 39087); Charters Towers (QM 32285); Julia Creek (QM 5963); Balemo (QM 7154). Kynuna (QM 390); Fermoy (55405); Longreach (QM 10444); Lorna Downs (ANCW 0838-41); Opalton (ANWC 1637); Ambathala (QM 35685); Birdsville (QM 10256, QM 10274, SAM 15303); Proa (QM 28432); Charleville (QM 29032).

New South Wales
Wilcannia (AM 69087).

Discussion

This paper brings the number of species and subspecies of python in Australia to 19 making the python radiation in Australia far more successful than even McDowell (1975) appreciated.

Until now the diagnostic characters for Australian genera and species of pythons have been simple but generally satisfactory. They included absence or presence of labial pits (*Aspidites* v. other pythons) and fragmented, asymmetric head shields or mostly entire, symmetric head shields (*Python* v. other pythons). Data from this and other studies (Smith 1981a and b, Gow 1981) show that there is a continuity in a number of characters in *Liasis* and *Python* which makes those genera and the species in them more difficult to define than previously believed. Australian members of these genera have recently undergone or are still undergoing speciation as shown by the intra and interspecific variation in the *L. childreni* species-group and the recognition of four subspecies of *P. spilotus (P. s. spilotus, P. s. variegatus, P. s. imbricatus* and *P. s. bredli).*

Schwaner and Dessauer (1981) show that immunologically some New Guinea pythons *(Liasis papuanus)* are readily distinguished from some Old World pythons *(Python regius).* A successful radiation by the *Pythoninae* in Australia and a subsequent invasion of New Guinea could explain this immunological difference. It may also explain why *Liasis boa* of the Bismark Archipelago shares the unusual condition of disappearing colour pattern with *L. childreni* and *L. perthensis.*

If *Liasis* and *Python* are considered as a unit certain trends become more apparent. For most species and subspecies in these groups a highly complex head scutellation (fragmentation) is matched by a high number of labial sensory pits (Table 2 and Smith 1981a). *Python spilotus* is characterised by having highly fragmented asymmetric head shields, many loreals and sensory pits, and creases on the rostral and anterior upper labials. In the *Liasis childreni* species-group *L. stimsoni stimsoni* has most labial pits including pits (creases) on the first and often second upper labial, most loreals (up to 20) and a greater tendency for the head scales to fragment (Table 2).

Table 1 Comparison of 10 characters of *Liasis stimsoni stimsoni*, *L. stimsoni orientalis* and *L. maculosus*.

		Midbody scale rows	Ventrals	Sub-caudals	Ventrals plus sub-caudals	Loreals	Post-oculars	Anterior tempo-rals	Upper labials	Lower labials	Pits on lower labials
L. stimsoni stimsoni	N	97	96	97	86	150	174	167	164	165	123
	range	39-47	260-302	40-53	305-351	7-20	3-6	4-7	11-15	12-16	3-8
	mean	43.4	279.5	46.2	323.1	12.2	4.2	5.3	13.0	14.5	5.6
L. stimsoni orientalis	N	72	69	77	66	144	145	145	136	143	124
	range	36-47	243-284	38-53	290-332	5-12	2-5	2-6	10-14	11-16	3-6
	mean	40.3	263.5	42.8	304.1	7.9	3.8	4.2	11.7	13.9	4.8
L. maculosus	N	73	72	70	67	157	148	149	143	131	137
	range	35-44	246-287	37-48	288-332	3-10	2-5	3-5	10-12	12-14	3-5
	mean	38.3	263.5	42.1	306.3	4.7	3.1	3.3	10.6	13.1	4.0

Table 2 Comparison of the means of 10 characters of eight taxa of *Liasis* arranged according to their mean number of midbody scale rows; data from present work and Smith (1981*b*).

	Midbody scale rows	Ventrals	Sub-caudals	Ventrals plus sub-caudals	Loreals	Post-oculars	Anterior tempo-rals	Upper labials	Lower labials	Pits on lower labials
Liasis perthensis	32.7	232.0	38.7	271.6	7.3	3.4	4.1	11.2	12.8	3.1
Liasis maculosus	38.3	263.5	42.1	306.3	4.7	3.1	3.3	10.6	13.1	4.0
Liasis stimsoni orientalis	40.3	263.5	42.8	304.1	7.9	3.8	4.2	11.7	13.9	4.8
Liasis childreni	41.3	272.8	47.3	321.6	7.9	3.6	3.9	11.8	14.1	4.5
Liasis stimsoni stimsoni	43.4	279.5	46.2	323.1	12.2	4.2	5.3	13.0	14.5	5.6
Liasis mackloti	45.6	279.2	80.8	360.4	1.0	2.7	3.4	11.5	16.2	3.6
Liasis olivaceus barroni	60.6	392.0	105.0	496.0	1.5	4.2	5.0	13.5	18.3	5.7
Liasis olivaceus olivaceus	66.0	361.0	106.5	468.5	1.0	4.6	4.6	13.6	20.2	6.0

Species recently described (*Python oenpelliensis* and *P. carinatus*) bridge the morphological gap between *P. spilotus* and *L. stimsoni stimsoni* in that the degree of head shield fragmentation is less than in *P. spilotus* and more than in *L. stimsoni stimsoni*.

Gow (1981) characterised *P. bredli* (herein considered a race of *P. spilotus*) by its greater number of interocular scales compared with *P. s. variegatus*. Here that character is regarded as intraspecific variation in the *Liasis-Python* group and part of the trend outlined above.

McDowell (1975) considered *Liasis* and *Python* so weakly defined morphologically that he felt they could be synonomized. Schwaner and Dessauer (1981) showed that *Liasis* and *Python* from New Guinea could not be distinguished immunologically. The data presented here adds more weight to the case for merging *Liasis* and *Python*. Consequently the proposal of Cogger *et al.* (1983) to replace *Liasis* by *Bothrochilus* Fitzinger is not likely to gain widespread acceptance.

There are indications from this study how the *L. childreni* and *L. olivaceus* species-group could be linked. As already pointed out, *L. stimsoni stimsoni* has the most complex head scutellation of the five taxa in the *L. childreni* species-group. In *L. maculosus* it is least complex (Table 2). Its low number of loreals (as few as three) approaches counts in the *L. olivaceus* species-group. The tendency for the lower posterior loreal in *L. maculosus* to occasionally fuse to the adjacent upper labial is a small but perhaps significant variation which helps make the link between the *L. gilberti* and *L. olivaceus* species-groups.

However the following considerations negate this conclusion. If notice is taken of trends in head scutellation (*L. maculosus* tending towards *L. olivaceus* species-group) one would expect a simpler pattern in *L. maculosus* but its pattern sometimes approaches that of *P. spilotus* (most races) in that dorsal blotches are dark-edged giving specimens a more complex (three-toned) coloration. A similar trend occurs in south-western *L. stimsoni stimsoni,* thus two taxa in the *Liasis childreni* species-group which have quite different scutellation (Table 2) tend to develop the predominantly *Python* pattern, presumably because they inhabit a similar environment.

If the number of loreals is merely part of the question of fusion or fragmentation of head shields they could very well change in response to shifts in diet. Similarly the number of labial pits could reflect the nature of prey, or method of hunting and subsequently be of little value in deducing the phylogeny of the pythons.

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